

MARSH DIEBACK AERIAL PHOTOGRAPHY: OVERVIEW AND PROSPECTS

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Louisiana is experiencing the most critical coastal wetland erosion and land loss problem in the United States, accounting for nearly 80% of the coastal marsh loss. Shoreline erosion rates exceed 6m/year in more than 80% of the Louisiana coastal zone and can reach up to 50 m/year in areas impacted by hurricanes. Continually impacted by a combination of natural forces and human activity, Louisiana coastal marsh loss is an estimated 34.9 mi²/yr.

Currently, Louisiana is experiencing a rare occurrence of large dead marsh (*Spartina alterniflora*) areas along the Gulf of Mexico Coast. Since its initial discovery in May 2000, investigations have been conducted by among others the Louisiana Department of Wildlife and Fisheries and the USGS National Wetlands Research Center to preliminarily document extent and degree of impact. The most noticeable discovery was the limited amount of spatial and temporal data available to evaluate the extent of the problem and to assess the various causal factors. Rarely are large-scale natural systems sufficiently monitored to address landscape-level changes that occur during large disturbance events. Diebacks have been documented in coastal Louisiana since the 1970's, and most recently in Texas in 1999. Previous diebacks have been small-scale and localized. The magnitude of the 2000 event in Louisiana is unprecedented, both in terms of scale and impacts over a short time period, elevating the importance of understanding how these events originate. Early survey results along with visual studies suggest that the severity of the dead marsh has progressed extensively. In all cases, data were collected only after the event leading only to speculation regarding the possible causes. Many coastal marsh areas are left with exposed mudflats with little vegetation to hold sediment in place. With marsh degradation at these levels, environmental effects such as wind, heavy rain, tide fluctuations and severe storms can easily accelerate sediment erosion and coastal wetland loss.

A comprehensive baseline dataset of information is necessary to proactively address this re-occurring problem. Color infrared aerial photography was collected between September 28 and November 14, 2000. An aerial photointerpretation committee was convened to prioritize areas of mapping and to develop a classification system. The photointerpretation uses the available 1998 color infrared aerial photography as the basis of the change analysis from marsh to brown marsh. The resulting 1:24,000 scale maps generated from the aerial photointerpretation will provide the spatial data that are necessary for an assessment of the areas of potential brown marsh restoration and remediation.